CLAIMS

1. Catalyst powder, comprising:

a porous support material; and

a noble metal particle and a transition metal particle, which are supported on the support material,

wherein the noble metal particle and the transition metal particle are supported on a single particle of the support material, and

the noble metal particle and the transition metal particle are supported at a predetermined interval each other.

2. The catalyst powder of claim 1,

wherein a diameter of the noble metal particle is within a range from 1 nm to 10 nm, and a diameter of the transition metal particle is 20 nm or less.

3. The catalyst powder of claim 1,

wherein the noble metal is at least one selected from platinum, palladium, rhodium, iridium, ruthenium, osmium and gold.

4. The catalyst powder of claim 1,

wherein the transition metal is at least one selected from manganese, iron, cobalt, nickel, copper and zinc.

5. The catalyst powder of claim 1,

wherein the support material is at least one selected from aluminum oxide, cerium oxide, zirconium oxide, silicon oxide, titanium oxide, silica alumina, vanadium oxide and tungsten oxide.

6. The catalyst powder of claim 1, further comprising:

a compound composed of at least one selected from cerium, neodymium,

praseodymium, lanthanum, zirconium, barium and magnesium.

7. The catalyst powder of claim 1,

wherein the catalyst powder is used for catalyst which purifies exhaust gas emitted from an internal combustion engine.

8. A method of producing catalyst powder, comprising:

precipitating any one of a noble metal particle and a transition metal particle in a reversed micelle;

precipitating, in the reversed micelle in which any one of the noble metal particle and the transition metal particle is precipitated, a porous support material which supports the noble metal particle and the transition metal particle; and

precipitating the other of the noble metal particle and the transition metal particle in the reversed micelle in which any one of the noble metal particle and the transition metal particle is precipitated.

9. The method of producing catalyst powder of claim 8,

wherein the noble metal particle is first precipitated, the support material is then precipitated, and thereafter, the transition metal particle is precipitated.

10. The method of producing catalyst powder of claim 8,

wherein the transition metal particle is first precipitated, the support material is then precipitated, and thereafter, the noble metal particle is precipitated.

11. The method of producing catalyst powder of claim 8, further comprising:

decaying the reversed micelle;

filtering and cleaning a complex compound composed of the noble metal particle, the support material and the transition metal particle; and

drying and baking the complex compound.

12. A method of producing catalyst powder, comprising:

preparing a reversed micellar solution having a reversed micelle which contains therein any one of a solution containing noble metal salt and a solution containing transition metal salt;

precipitating any one of a noble metal particle and a transition metal particle in the reversed micelle by mixing a reducing agent into the reversed micellar solution;

precipitating a support material in the reversed micelle by mixing a solution containing a support material precursor into the reversed micellar solution, after any one of the noble metal particle and the transition metal particle is precipitated;

mixing the other of the solution containing the noble metal salt and the solution containing the transition metal salt into the reversed micellar solution after the support material and any one of the noble metal particle and the transition metal particle are precipitated; and

precipitating the other of the noble metal particle and the transition metal particle in the reversed micelle by mixing a reducing agent into the reversed micellar solution.

13. The method of producing catalyst powder of claim 12,

wherein the noble metal particle is first precipitated, the support material is then precipitated, and thereafter, the transition metal particle is precipitated.

14. The method of producing catalyst powder of claim 12,

wherein the transition metal particle is first precipitated, the support material is then precipitated, and thereafter, the noble metal particle is precipitated.

15. The method of producing catalyst powder of claim 12, further

comprising:

decaying the reversed micelle;

filtering and cleaning a complex compound composed of the noble metal particle, the support material and the transition metal particle; and

drying and baking the complex compound.